Isolation and identification of diazinon degrading bacteria from fresh water: a case study on the sediments of Lake Parishan in Iran

ABSTRACT

Diazinon is an organophosphate insecticide which is widely used in various industries. It is known as an important causative of water pollution which eventually redound death of aquatic animals. Today microorganisms are considered as a best choice to reduce environmental pollution. This study was done to identify diazinon degrading bacteria from sediments of Lake Parishan (IRAN) and to evaluate their degrading rate as well. Sampling was done from the surface sediments of Lake Parishan and its surrounding farms during summer, autumn and winter, then incubated in liquid salt medium containing diazinon for 20 days at 35°C. After growing, bacteria were transferred to solid saline medium. They were identified using biochemical tests; thereafter in order to evaluate their ability in degrading of diazinon, diagnostic tests were performed. Result showed that bacteria Pseudomonas, staphylococcus, Bacillus, Corynebacterium, Acinetobacter, Alcaligenes, Serattia, Salmonella, Citrobacter and Providencia are able to degrade diazinon. Among them Pseudomonas was the strongest in summer and winter, while Citrobacter was the most preferable bacterium in fall. It was also detected that combined population of Gram positive and Gram negative bacteria together are able to degrade diazinon faster. Therefore, the present study confirmed the application of bacteria for reducing diazinon pollution in waters considering their ease and economical application.

Keyword: Diazinon; Degarding bacteria; Bioremediation; Lake Parishan